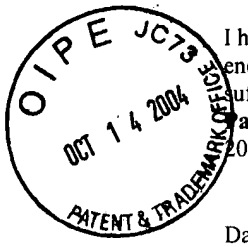
PATENT MS171134.01/MSFTP214US



CERTIFICATE OF MAILING

I hereby certify that this correspondence (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: **Mail Stop Appeal Briefs – Patents**, Assistant Commissioner for Patents, U.S. Patent and Trademark Office, Washington, D.C. 20231.

Date: 10-11-04

Himanshu S. Amin

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Applicant(s): Eric J. Horvitz

Serial No: 09/894,392

Filing Date: June 28, 2001

Examiner: Brian D. Goddard

Art Unit: 2171

Title: UTILITY-BASED ARCHIVING

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Dear Sir:

Applicants submit this brief in connection with an appeal of the above-identified patent application. A credit card payment form is filed concurrently herewith in connection with all fees due regarding this appeal brief. In the event any additional fees may be due and/or are not covered by the credit card, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1063 [MSFTP214US].

10/15/2004 JADD01 00000043 09894392
01 FC:1402 340.00 OP

I. Real Party in Interest (37 C.F.R. §41.37(c)(1)(i))

The real party in interest in the present appeal is Microsoft Corporation, the assignee of the present application.

II. Related Appeals and Interferences (37 C.F.R. §41.37(c)(1)(ii))

Appellant, appellant's legal representative, and/or the assignee of the present application are not aware of any appeals or interferences which may be related to, will directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims (37 C.F.R. §41.37(c)(1)(iii))

Claims 1-8 and 10-45 are pending in the application and stand rejected by the Examiner. The rejection of claims 1-8 and 10-45 is being appealed.

IV. Status of Amendments (37 C.F.R. §41.37(c)(1)(iv))

No claim amendments have been entered after the Final Office Action.

V. Summary of Claimed Subject Matter (37 C.F.R. §41.37(c)(1)(v))

A. Independent Claim 1

Independent claim 1 relates to a system that facilitates maintaining an item. The system includes a first data store that stores the item in an active state and a second data store that stores the item in an archived state. (*See e.g.*, Application at p. 6, lines 23-25). The system also includes an inference system that inferentially determines whether to store the item in an active or archived state based at least in part upon information related to at least one of a property of the item, a property of a user and extrinsic data. (*See e.g.*, Application at p. 7, lines 7-8).

B. Independent Claim 11

Independent claim 11 relates to a utility based item archiving system. The utility based archiving system includes means for determining the utility of an item. (*See e.g.*,

Application at p. 3, lines 23-27; p. 6, lines 15-18; p. 8, lines 1-11; p. 9, lines 28-30; p. 11, line 29 through p. 12, line 7; p. 13, lines 12-15; p. 14, lines 4-5; p. 14, line 31 through p. 16, line 15; p. 21, lines 5-18; Fig. 1, element 112; Fig. 5, element 512; Fig. 7, element 710; Fig. 8, element 800; and Fig. 9, element 900). The system also includes means for inferring whether to store as active or archive the item based upon the determined utility of the item. (*See e.g.*, Application at p. 6, lines 21-23; p. 7, lines 7-8; p. 7, line 29 through p. 16, line 15; p. 21, lines 5-18; Fig. 1, element 110; Fig. 4, element 410; Fig. 5, element 510; and Fig. 6, element 610).

The means for determining the utility of an item and the means for inferring are identified as limitations subject to the provisions of 35 U.S.C. §112 ¶6. The corresponding structures are identified with reference to the specification and drawings in the parentheticals above corresponding to those claim limitations.

C. Independent Claim 18

Independent claim 18 relates to a method for determining how to store items. The method includes determining respective item utilities through probabilistic computations and determining respective value densities of the items based upon determined probabilities of item access and item sizes. (*See e.g.*, Application at p. 3, lines 4-9 and 21-28; and p. 4, lines 4-10). The method also includes inferring whether to store actively, archive or discard items based upon at least one of the determined probabilities and the value densities. (*See e.g.*, Application at p. 3, lines 4-9 and 18-28; and p. 4, lines 4-14).

D. Independent Claim 21

Independent claim 21 relates to a method of streamlining actively stored items. The method includes removing items from an active item store when at least one of the determined item utilities and value densities fall below a predetermined threshold. (*See e.g.*, Application at p. 4, lines 6-8).

E. Independent Claim 24

Independent claim 24 relates to a system adapted to infer how to store an item. The system includes a probability component adapted to determine the probability that

the item will be accessed. (*See e.g.*, Application at p. 8, lines 1-11). The system also includes a cost-benefit component adapted to determine the value density of the item as a function of the determined probability and the size of the item. (*See e.g.*, Application at p. 8, lines 12-21). The system also includes an inference system adapted to infer whether to store the item in an active or archive item store based upon at least one of the determined probability and the value density. (*See e.g.*, Application at p. 8, lines 22-30).

F. Independent Claim 33

Independent claim 33 relates to a system operable to determine which of a plurality of items to store actively. The system includes a probability component adapted to determine respective probabilities that the items will be accessed. (*See e.g.*, Application at p. 8, lines 1-11). The system also includes a cost-benefit component adapted to determine respective value densities as a function of the respective probabilities and sizes of the items. (*See e.g.*, Application at p. 8, lines 12-21). The system also includes an inference system adapted to infer whether items should be actively stored based upon at least one of the respective probabilities and the value densities. (*See e.g.*, Application at p. 8, lines 22-30). The system also includes an optimization component operable to determine which items to store actively based upon the respective value densities of the items and the amount of active space available. (*See e.g.*, Application at p. 11, lines 8-28).

G. Independent Claim 39

Independent claim 39 relates to a method to determine which of a plurality of items to store actively. The method includes determining the respective probabilities that the items will be accessed. (*See e.g.*, Application at p. 17, lines 1-6). The method also includes determining the respective value densities as a function of the respective probabilities and sizes of the items. (*See e.g.*, Application at p. 17, lines 6-12). The method also includes inferring whether items should be actively stored based upon at least one of the respective probabilities and the value densities. (*See e.g.*, Application at p. 17, lines 12-15). The method also includes determining which items to store in active

space based upon the respective value densities of the items and the amount of active space available. (*See e.g.*, Application at p. 17, lines 15-25).

H. Independent Claim 42

Independent claim 42 relates to a system operable to infer whether an item will be accessed once or more than once. The system includes an inference system operable to infer whether the item will be accessed once or more than once based on a comparison of properties of the item to properties of other items that have been accessed once. (*See e.g.*, Application at p. 9, lines 8-16). The inference system also is operable to analyze properties of a user and extrinsic data. (*See e.g.*, Application at p. 9, lines 8-16). The system also includes a probability component adapted to determine the probability that the item will be accessed. (*See e.g.*, Application at p. 8, lines 1-11). The system also includes a cost-benefit component adapted to determine the value density of the item as a function of the determined probability and size of the item. (*See e.g.*, Application at p. 8, lines 12-21). The inference system also is operable to compare at least one of the determined probability and the value density to the probabilities and the value densities of items that have been accessed once. (*See e.g.*, Application at p. 9, lines 17-24).

I. Independent Claim 43

Independent claim 43 relates to a method to infer whether an item will be accessed once or more than once. The method includes comparing properties of the item to properties of other items that have been accessed once. (*See e.g.*, Application at p. 9, lines 8-16). The method also includes analyzing properties of a user and extrinsic data. (*See e.g.*, Application at p. 9, lines 8-16). The method also includes determining a probability that the item will be accessed. (*See e.g.*, Application at p. 9, lines 17-24). The method also includes determining a value density of the item as a function of the determined probability and size of the item. (*See e.g.*, Application at p. 9, lines 17-24). The method also includes comparing the determined probability and value density to the probabilities and the value densities of items that have been accessed once. (*See e.g.*, Application at p. 9, lines 17-31).

J. Independent Claim 45

Independent claim 45 relates to an interactive user interface (UI) adapted to display a condition that affects how a decision is made regarding the storage of an item. (*See e.g.*, Application at p. 14, lines 1-30). The UI includes a selection element operable to allow a condition to be enabled/disabled and an entry element operable to permit a condition to be configured. (*See e.g.*, Application at p. 14, lines 1-30).

VI. Grounds of Rejection to be Reviewed (37 C.F.R. §41.37(c)(1)(vi))

A. Whether claims 1-3 and 11-13 are unpatentable under 35 U.S.C. §102(b) in view of Shinmura *et al.*, U.S. Patent No. 5,193,171 ("Shinmura *et al.*");

B. Whether claims 1-4 and 11-13 are unpatentable under 35 U.S.C. §102(e) in view of Sakaguchi *et al.*, U.S. Patent No. 6,199,103 ("Sakaguchi *et al.*");

C. Whether claims 4-6, 14-21, 23-28, 30-37 and 39-45 are unpatentable under 35 U.S.C. §103(a) over Shinmura *et al.* in view of the article entitled "Continual Computation Policies for Utility-Directed Prefetching" by Horvitz ("Horvitz"); and

D. Whether claims 7-8, 10, 22, 29 and 38 are unpatentable under 35 U.S.C. §103(a) over Shinmura *et al.* in view of Horvitz, and further in view of Sakaguchi *et al.*

VII. Argument (37 C.F.R. §41.37(c)(1)(vii))

The systems, methods, computer-readable media, and user interfaces recited in the claims relate generally to selectively archiving items. The systems are capable of making ***inferences*** regarding what a user would like to do with an item. The inferences may be based in part upon a cost-benefit analysis. The cost-benefit analysis entails determining the relative costs associated with keeping an item active versus the benefits from a user having quick and easy access to the item. For example, the systems may assess the cost relative to the benefit by calculating a value density, which takes into

account the item's size and the probability a user will access the item. The systems may account for temporal changes, for example, by continuously updating value densities and probabilities. The systems may adapt the inference-based decisions such that the inferences made by the system evolve over time. For example, the systems may observe user activity and use the observations to adapt the inferences.

A. Rejection of Claims 1-3 and 11-13 Under 35 U.S.C. §102(b)

Claims 1-3 and 11-13 stand rejected under 35 U.S.C. §102(b) under the contention that these claims are unpatentable over Shinmura *et al.* Reversal of this rejection is respectfully requested for at least the following reasons. Shinmura *et al.* does not disclose ***each*** and ***every*** limitation of the claims. With respect to claims 1-3, Shinmura *et al.* does not disclose an ***inference*** system that ***inferentially*** determines whether to store an item in an active or archived state. With respect to claims 11-13, Shinmura *et al.* does not disclose means for ***inferring***. Thus, the cited reference does not anticipate the subject claims.

A single prior art reference anticipates a patent claim if ***each*** and ***every*** limitation set forth in the patent claim is disclosed in the reference, either expressly or inherently. (*See Trintec Industries, Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1295, 63 U.S.P.Q.2d 1597, 1599, 2 U.S.P.Q.2d 1051, 1052-53 (Fed. Cir. 2002) (citing to *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987))) (emphasis added). Moreover, "[t]he ***identical*** invention must be shown in as ***complete*** detail as is contained in the patent claim." (*Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989) (emphasis added) (citing *Jamesbury Corp. v. Litton Industrial Products, Inc.*, 756 F.2d 1556, 1560, 225 U.S.P.Q. 253, 257 (Fed. Cir. 1985); and *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548, 220 U.S.P.Q. 193, 198 (Fed. Cir. 1983))).

Independent claim 1 recites the limitation an ***inference*** system that ***inferentially*** determines whether to store an item in an active or archived state. Independent claim 11 recites the limitation a ***means*** for ***inferring***. The ***inference***-based systems recited in the subject claims ***infer*** what a user would like to have done with a particular item in part by making a prediction as to a user's future need or desire to access the item (*i.e.*, expected

utility of the item) and in part upon the cost of keeping the item in an active state. (*See e.g.*, Application at p. 7, line 29 through p. 8, line 30). The ***inference*** based systems recited in the subject claims provide for a highly dynamic system capable of incorporating temporal sensitivity as well as user-specific customization. (*See e.g.*, Application at p. 9, line 25 through p. 10, line 20; and p. 14, lines 7-19).

Shinmura *et al.* discloses a system for managing space on storage devices. (*See* Shinmura *et al.* at Abstract). The system of Shinmura *et al.* migrates files from an active store to another store based on how much space is available on the storage devices, the size of the file, and how long ago a file was last accessed. (*See e.g.*, Shinmura *et al.* at col. 2, line 15 through col. 6, line 64). The system taught by Shinmura *et al.* uses *static, deterministic* rules (*i.e.*, IF-THEN rules) to determine whether to migrate a file to another storage device. Shinmura *et al.* makes no mention of an ***inference***-based approach that is capable of predicting how a user would likely want an item treated.

Initially in the Final Office Action, the Examiner contends that Shinmura *et al.* at Figures 3-4 and column 6, lines 34-47 describes an inference system. (*See* Final Office Action dated April 13, 2004 at pp. 2-3). However, neither Figures 3-4 nor the cited passage disclose inferring whether an item is a candidate for archiving. The flow diagrams shown in figures 3 and 4 disclose only *static, deterministic* IF-THEN decision-making based solely on whether a condition is true or false. (*See e.g.*, Shinmura *et al.* at Figs. 3-4 and col. 5, line 35 through col. 6, line 64). Column 6, lines 34-47 of Shinmura *et al.* reads as follows:

> [i]f the request is a level 3 migration archive (decision 46), the file specified by the user is decided as a migration file (step 48) to execute a decision 49. If it is not a level 3 migration archive (decision 46), a file which has not been used as a migration file of an object user, that is, which has not been declared to be used, and is the oldest referenced file or has a large space capacity is selected with reference to a table having presence of a data set, file size and data access in a volume to execute a decision 49. Whether or not there is a file to be migrated is checked at a decision 49. If there is such a file, the file is then migrated from the active file 9 to the inactive pool 10 (step 50).

(Shinmura *et al.* at col. 6, lines 34-47). This passage merely reinforces the point that no inference is made, as it simply discloses a set of IF-THEN rules. Subsequently in the Final Office Action, the Examiner concedes that Shinmura *et al.* fails to disclose ***inferring*** whether an item is a candidate for archiving:

> Shinmura's system does not explicitly perform 'probabilistic computations to ascertain a probability of user access' as claimed. Specifically, a file that has not been accessed by a particular user, or a file that is least recently accessed out of all of a user's files, has the lowest probability of user access in Shinmura's determination.

(Final Office Action at p. 6).

Anticipation requires that the ***identical*** invention be disclosed in a single reference. (*See e.g.*, *Richardson,* 868 F.2d at 1236, 9 U.S.P.Q.2d at 1920). The different way in which the system taught by Shinmura *et al.* treats "one-shot" items confirms that the system taught by Shinmura *et al.* is not identical to the inference systems recited in the subject claims. One-shot items are items that a user is likely to access only once. (*See e.g.*, Application at p. 9, lines 5-7). The inference systems recited in the subject claims can ***infer*** that a short reply message that does not include any attachments, that is sent by someone with whom the user frequently corresponds, and that is sent in response to user initiated dialog should be considered a "one-shot" item. (*See e.g.*, Application at p. 9, lines 11-14). Because the systems recited in the subject claims ***infer*** that the user will likely not want to open up such item again (or at least not in the relevant future), the systems will archive the item after the user accesses the item the first time. (*See e.g.*, Application at p. 9, lines 5-14). In contrast, the system of Shinmura *et al.* would not be able to make such an inference and would keep such an item active because it was recently accessed and of small size. Therefore, as this example illustrates, the system of Shinmura *et al.* is *not identical* to the systems recited in the subject claims and as such does not anticipate the subject claims.

In view of at least the foregoing, it is readily apparent that Shinmura *et al.* does not disclose ***each*** and ***every*** limitation of the subject claims. With respect to claims 1-3, Shinmura *et al.* does not disclose an ***inference*** system that ***inferentially*** determines

whether to store an item in an active or archived state. With respect to claims 11-13, Shinmura *et al.* does not disclose ***means*** for ***inferring***. Thus, the system of Shinmura *et al.* is *not identical* to the systems recited in the subject claims and as such does not anticipate the subject claims. Accordingly, this rejection should be withdrawn and allowance of the subject claims is respectfully requested

B. Rejection of Claims 1-4 and 11-13 Under 35 U.S.C. §102(e)

Claims 1-4 and 11-13 stand rejected under 35 U.S.C. §102(e) under the contention that these claims are anticipated by Sakaguchi *et al.* Withdrawal of this rejection is respectfully requested for at least the following reasons. Sakaguchi *et al.* does not disclose ***each*** and ***every*** limitation of the claims. With respect to claims 1-4, Sakaguchi *et al.* does not disclose a data store adapted to store the item in an ***archived*** state or an ***inference*** system that ***inferentially*** determines whether to store an item in an ***active or archived*** state. With respect to claims 11-13, Sakaguchi *et al.* does not disclose means for ***inferring*** whether to store as ***active or to archive*** the item.

Sakaguchi *et al.* merely discloses a conventional junk email filtering system that uses keyword vectoring to distinguish between "junk" and "non-junk" emails. (*See* Sakaguchi *et al.* at Abstract). The keyword vectoring analysis entails determining whether the contents of an item are similar enough to a representative junk email to be classified as junk. (*See Id.*). Items that are similar enough to the representative junk email are *isolated* in a junk mail folder or *deleted.* (*See e.g.*, Sakaguchi *et al.* at col. 6, lines 8-12 and col. 36-38).

In the Final Office Action, the Examiner contends that the limitations of the subject claims are disclosed by Sakaguchi *et al.* at Figures 1-5 and the corresponding portions of the specification. (*See* Final Office Action at pp. 4-5). The Examiner indicates that the Junk Electronic Mail Determination Processing Section (reference number 2) and the Estimated Junk Electronic Mail Storage Section (reference number 6) of the Sakaguchi *et al.* system correspond, respectively, to the inferences and archive stores recited in the subject claims. However, these features taught by Sakaguchi *et al.* do not disclose inferences and archive stores. As discussed in Section A *supra*, the systems recited in the subject claims ***infer*** whether to maintain items in an active store or

move such items to an ***inactive store*** (archive) by making a prediction as to the user's future needs or desires to access the item and a determination of the cost of keeping the item active. This ***inference*** is based upon a cost-benefit analysis that takes into account data *other* than merely the contents of the document. The keyword vectoring taught by Sakaguchi *et al.* is *not* the same as an inference because it does not utilize predictions based on the user's future need or desire to access an item (*i.e.*, expected utility of the item). Sakaguchi *et al.*'s keyword vectoring-based system merely determines similarities between data content (*i.e.*, compares a representative junk email to an incoming email).

Sakaguchi *et al.* also does not disclose storing an item in an ***archive*** as recited in the subject claims. As described in the subject patent application, an item is in an active state if the user has quicker and easier access to the item *relative* to the ***archived*** state. (*See e.g.*, Application at p. 6, lines 25-31). The system of Sakaguchi *et al.* simply isolates a user from being exposed to junk mail either by placing the incoming email in a junk mail folder or by deleting the junk email. Isolating a user from junk mail by either placing it in a separate folder or deleting it is not the same as determining whether to store an item in an active state or to ***archive*** the item. In the systems recited in the subject claims, the user can access archived items, but it is not as easy and not as quick as accessing active items. In the system of Sakaguchi *et al.*, either the junk mail is deleted (which means that the user has *no* access to the item) or the item is simply moved to a junk mail folder (which means that the user can access the item *just as easily and as quickly* as email in the non-junk mail folder). Therefore, either the item is placed in a junk mail folder, which is *as readily accessible* as the items in the non-junk mail folders, or it is deleted and the user never even knows it existed and has *no* access to it. Nowhere in Sakaguchi *et al.* is anything like an ***archive*** (*i.e.*, a data store that is not as easily and quickly accessed by a user as an active data store) even mentioned.

Moreover, anticipation requires that the ***identical*** invention be disclosed in a single reference. (*See e.g.*, *Richardson,* 868 F.2d at 1236, 9 U.S.P.Q.2d at 1920). The different way in which the system taught by Sakaguchi *et al.* treats "one-shot" items confirms that the system taught by Sakaguchi *et al.* is *not identical* to the inference systems recited in the subject claims. One-shot items are items that a user is likely to access only once. (*See e.g.*, Application at p. 9, lines 5-7). The inference systems recited

in the subject claims can ***infer*** that a short reply message that does not include any attachments, that is sent by someone with whom the user frequently corresponds, and that is sent in response to user initiated dialog should be considered a "one-shot" item. (*See e.g.*, Application at p. 9, lines 11-14). Because the systems recited in the subject claims ***infer*** that the user will likely not want to open up such item again (or at least not in the relevant future), the systems will archive the item after the user accesses the item the first time. (*See e.g.*, Application at p. 9, lines 5-14). In contrast, the system of Sakaguchi *et al.* would *not* be able to make such an inference. The system of Sakaguchi *et al.* merely would compare the contents of the message to a representative junk email and if the contents were not similar, the system would not filter the email. After the user accessed the item the first time, the system of Sakaguchi *et al.* would not move or do anything at all to the email. Therefore, as this example illustrates, the system of Sakaguchi *et al.* is *not identical* to the systems recited in the subject claims and as such does not anticipate the subject claims.

In view of at least the foregoing, it is readily apparent that Sakaguchi *et al.* does not disclose ***each and every*** limitation of the subject claims. With respect to claims 1-4, Sakaguchi *et al.* does not disclose a data store adapted to store the item in an ***archived*** state or an ***inference*** system that ***inferentially*** determines whether to store an item in an ***active or archived*** state. With respect to claims 11-13, Sakaguchi *et al.* does not disclose means for ***inferring*** whether to store as ***active or to archive*** the item. Thus, the system of Sakaguchi *et al.* is *not identical* to the systems recited in the subject claims and as such does not anticipate the subject claims. Accordingly, this rejection should be withdrawn and allowance of the subject claims is respectfully requested

C. Rejection of Claims 4-6, 14-21, 23-28, 30-37 and 39-45 Under 35 U.S.C. §103(a)

Claims 4-6, 14-21, 23-28, 30-37 and 39-45 stand rejected under 35 U.S.C. §103(a) under the contention that these claims are unpatentable over Shinmura *et al.* in view of Horvitz. Reversal of this rejection is respectfully requested for at least the following reasons. The Examiner has improperly combined the cited references using hindsight reconstruction, without evidence to support the combination and in the face of

contrary teachings in the prior art. There is no teaching, suggestion, or motivation to combine Shinmura *et al.* with Horvitz and the Examiner has not provided any ***evidence in the prior art or other reference of record*** to show otherwise. Indeed, the Examiner has merely used the teachings of the applicant's specification as a 20/20 hindsight-based roadmap to achieve the purported combination. Moreover, Shinmura *et al.* ***teaches away*** from using the methodology of Horvitz in the Shinmura *et al.* systems. Thus, the PTO has failed to establish a *prima facie* case of obviousness and has failed to show that the subject matter as a ***whole*** would have been obvious at the time the invention was made to a person having ordinary skill in the art.

The test of obviousness is whether "the subject matter sought to be patented and the prior art are such that the subject matter as a ***whole*** would have been obvious at the time the invention was made to a person having ordinary skill in the art." (*Graham v. John Deere Co.*, 383 U.S. 1, 3 (1966) (emphasis added); *see also e.g.*, *In re Dembiczak*, 175 F.3d 994, 998, 50 U.S.P.Q. 1614, 1616 (Fed. Cir. 1999)). In evaluating obviousness, the PTO must conduct the factual inquiry as outlined in *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). (*See In re Lee*, 277 F.3d 1338, 1342-43, 61 U.S.P.Q.2d 1430, 1433 (Fed. Cir. 2002)). The factual inquiry to be conducted includes determining: (1) the scope and content of the prior art; (2) the level of ordinary skill in the prior art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness. (*See Graham*, 383 U.S. 1, 17-18 (1966)). The PTO must "not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion." (*In re Lee*, 277 F.3d at 1344, 61 U.S.P.Q.2d at 1434). The PTO cannot rely merely on conclusory statements and assertions of "common sense" to remedy deficiencies of the cited references. (*In re Lee*, 277 F.3d at 1344, 61 U.S.P.Q.2d at 1434). If the PTO relies on multiple prior art references as the basis for an obviousness rejection, it is not enough that all of the claim limitations appear in the prior art. To establish a *prima facie* case of obviousness, the PTO must also make an adequate showing of a suggestion, teaching, or motivation to combine the prior art references. (*See In re Dembiczak*, 175 F.3d 994, 999-1001, 50 U.S.P.Q. 1614, 1617 (Fed. Cir. 1999) (citing to *C.R. Bard, Inc., v. M3 Systems, Inc.*, 157 F.3d 1340, 1352, 48 U.S.P.Q.2d 1225, 1232

(Fed. Cir. 1998)); *see also In re Lee*, 277 F.3d at 1343, 61 U.S.P.Q.2d at 1433). Only if the PTO establishes a *prima facie* case of obviousness does the burden of coming forward with evidence or argument shift to the applicant. (*See In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1445 (Fed. Cir. 1992)).

Horvitz discloses prefetching techniques for minimizing network latencies inherent with low-bandwidth local communication links to the Internet. (*See* Horvitz at p. 1). The systems of Horvitz prefetch text and multimedia Internet content during idle-time based on a user's behavior and the link structure of the document to be prefetched. (*See* Horvitz at p. 179). Horvitz does not teach or suggest inferring whether to ***keep active or to archive*** files, but rather, discloses prefetching (*i.e., downloading*) web pages. Thus, Horvitz does not teach or suggest employing inferences to manage the storage of items in an ***active or inactive state***.

As discussed above in Section A *supra*, Shinmura *et al.* does not disclose systems that employ ***inference***-based decision making. Shinmura *et al.* merely teaches systems and methods that employ conventional IF-THEN *deterministic* decision-making. The Examiner concedes that:

> Shinmura's system does not explicitly perform 'probabilistic computations to ascertain a probability of user access' as claimed. Specifically, a file that has not been accessed by a particular user, or a file that is least recently accessed out of all of a user's files, has the lowest probability of user access in Shinmura's determination.

(Final Office Action at p. 6). As discussed in Section A *supra*, the systems and methods recited in the subject claims infer whether to store actively or archive items by making a prediction as to a user's need or desire to access an item and a determination as to the cost of keeping the item active. As the Examiner acknowledges, Shinmura *et al.* is silent regarding probabilistic computations to ascertain a probability of user access. In an attempt to remedy the defects of Shinmura *et al.*, the Examiner cites to Horvitz. However, neither of these references provide any teaching, suggestion, or motivation to combine the teachings of Shinmura *et al.* with Horvitz.

The Examiner contends that it would be obvious to combine the teachings of Horvitz with the teachings of Shinmura *et al.* because "[o]ne would have been motivated to do so in order to provide a more accurate, yet cost-effective means for determining probability of user access, instead of a simple choice of a non/least accessed item." (Final Office Action at p. 7). This purported motivation is nothing more than pointing out that the deterministic criteria (*i.e.*, non/least accessed item) disclosed by Shinmura *et al.* are not very accurate or cost-effective. Moreover, this purported inefficiency of the Shinmura *et al.* system is not taught or suggested by either Shinmura *et al.* or Horvitz. Horvitz makes no mention at all that the methods of Horvitz could be used for any reason other than prefetching and certainly does not suggest that the methods could be used to improve archiving. Shinmura *et al.* repeatedly teaches that its system is efficient and nothing in the reference even hints at any accuracy or cost problems. (*See e.g.*, Shinmura *et al.* at col. 3, lines 7-9; col. 7, lines 54-56; and col. 8, lines 15-18 and lines 41-50). By repeatedly proclaiming the system's efficiency, Shinmura *et al.* actually ***teaches away*** from substituting any other decision-making methodology into its system.

The Examiner also contends that the motivation to combine references is "Shinmura's silence on the detailed calculations used in decision step 47." (Final Office Action at p. 8). This purported motivation to combine references is nothing more than pointing out what it is that Shinmura *et al.* does not teach. To show a teaching, suggestion or motivation to combine references sufficient *to establish a prima facie case of obviousness*, an Examiner must do more than just point out what a prior art reference does not teach. To hold otherwise would nullify the requirement.

The Examiner further contends that "suggestion can be found in Horvitz' fulfillment of a need to more accurately gauge probability of user access to a document/file, as disclosed in Section 3 of the Horvitz reference, in light of the simplistic measure of probability disclosed in Shinmura." (Final Office Action at p. 15). This purported suggestion to combine is just a restatement of the characteristics of the systems of Horvitz and Shinmura *et al.* The Examiner has not explained why one of ordinary skill in the art would be motivated to combine the teachings of these references. Horvitz makes no mention that its techniques could be used for any other purpose. In light of the fact that Shinmura *et al.* repeatedly teaches the benefits of its system and does not even

hint at any deficiencies (thus ***teaching away*** from modifying the Shinmura *et al.* system), one of ordinary skill in the art would not be motivated to modify the system of Shinmura *et al.* and nothing in Horvitz suggests otherwise.

The Examiner is basing the rejection on the assertion that it would have been obvious to do something not suggested in the art but, rather, suggested by the advantages disclosed in applicant's specification. This sort of approach has been repeatedly condemned by the Federal Circuit as entering the "tempting but forbidden zone of hindsight." (*In re Dembiczak*, 175 F.3d at 998, 50 U.S.P.Q. at 1616 (citing to *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 873, 228 U.S.P.Q. 90, 98 (Fed. Cir. 1985), overruled on other grounds by *Nobelpharma AB v. Implant Innovations, Inc.*, 141 F.3d 1059, 46 U.S.P.Q.2d 1097 (Fed. Cir. 1998))). By imbuing "one of ordinary skill in the art with knowledge of the invention in suit when ***no prior art reference or references of record*** convey or suggest knowledge," the Examiner has fallen "victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." (*In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) (citing to *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983)) (emphasis added); *see also In re Dembiczak*, 175 F.3d at 998-99, 50 U.S.P.Q. at 1616-17). As the Federal Circuit has stated:

> Measuring a claimed invention against the standard established by section 103 requires the oft-difficult but critical step of casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. . . . Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references. Combining prior art references ***without evidence*** of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability--the essence of hindsight. . . . [T]he showing must be ***clear and particular. Broad conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence."***

(*In re Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q. at 1617) (internal citations omitted) (emphasis added). Indeed, all the Examiner has done is provide the "[b]road conclusory statements" that the Federal Circuit has held are not *evidence* that can support an obviousness rejection. (*In re Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q. at 1617).

For at least the reasons discussed in this section and Section A *supra*, neither Shinmura *et al.* nor Horvitz teach or suggest using ***inference***-based decisions to keep items in ***an active or archived*** state and the Examiner has failed to make an adequate showing of a teaching, suggestion, or motivation to combine the references. Accordingly, the Examiner has failed to establish a *prima facie* case of obviousness and has failed to show that the subject matter as a ***whole*** would have been obvious at the time the invention was made to a person having ordinary skill in the art. Hence, this rejection should be withdrawn and allowance of the subject claims is respectfully requested

D. Rejection of Claims 7-8, 10, 22, 29 and 38 Under 35 U.S.C. §103(a)

Claims 7-8, 10, 22, 29 and 38 stand rejected under 35 U.S.C. §103(a) under the contention that these claims are unpatentable over Shinmura *et al.* modified by Horvitz and further modified by Sakaguchi *et al.* Reversal of this rejection is respectfully requested for at least the following reasons. First, as discussed in Section C *supra*, there is no teaching, suggestion, or motivation to combine Shinmura *et al.* with Horvitz and the Examiner has not provided any *evidence in the prior art or other reference of record* to show otherwise. Moreover, Shinmura *et al.* ***teaches away*** from using the methodology of Horvitz (or any other methodology) in the Shinmura *et al.* systems. The Examiner has not contended that Sakaguchi *et al.* provides any teaching, suggestion, or motivation to combine Shinmura *et al.* with Horvitz. Therefore, Sakaguchi *et al.* does not remedy the lack of a teaching, suggestion or motivation to combine Shinmura *et al.* with Horvitz as discussed in Section C *supra*.

Second, the Examiner contends that Sakaguchi *et al.* teaches a learning system and determining if an item is a one-shot item. (*See* Final Office Action at pp. 11-12). As discussed in Section B *supra*, Sakaguchi *et al.* does not disclose determining if an item is a one-shot item. One-shot items are items that a user is likely to access only once. Sakaguchi *et al.* teaches only filtering junk email, the goal of which is to *isolate* the user

from ever having to access an unwanted to email. Junk emails are not one-shot items. Accordingly, the Examiner has failed to establish a *prima facie* case of obviousness and has failed to show that the subject matter as a ***whole*** would have been obvious at the time the invention was made to a person having ordinary skill in the art.

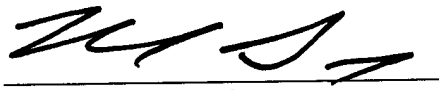
Third, claims 7-8, 10, 22, 29 and 38 depend from independent claims 1, 21, 24 and 33 respectively. By virtue of this dependency, claims 7-8, 10, 22, 29 and 38 contain all of the limitations of their respective independent claims. As discussed in Sections A-C *supra*, claims 1, 21, 24, and 33 are patentable. Sakaguchi *et al.* fails to make up for the aforementioned deficiencies. Accordingly, withdrawal of the rejection and allowance of the subject claims is respectfully requested.

E. Conclusion

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited references. Accordingly, it is respectfully requested that the rejections of claims 1-8 and 10-45 be reversed.

If any additional fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Respectfully submitted,
AMIN & TUROCY, LLP



Himanshu S. Amin
Reg. No. 40,894

AMIN & TUROCY, LLP
24th Floor, National City Center
1900 East 9th Street
Telephone: (216) 696-8730
Facsimile: (216) 696-8731

VIII. Claims Appendix (37 C.F.R. §41.37(c)(1)(viii))

1. A system that facilitates maintaining an item, comprising:

a first data store that stores the item in an active state;

a second data store that stores the item in an archived state; and

an inference system that inferentially determines whether to store the item in an active or archived state based at least in part upon information related to at least one of: a property of the item, a property of a user and extrinsic data.

2. The system of claim 1 further comprising:

a property log that stores as evidence at least one of: information related to a property of the item, a property of a user and extrinsic data, the inference system consults the property log when making an inferential determination.

3. The system of claim 2, the inference system further basing determinations upon a probability of user access to the item.

4. The system of claim 3 wherein at least one of: a property of the item, a property of a user and extrinsic data undergo probabilistic computations to ascertain a probability of user access.

5. The system of claim 4, the inference system further basing determinations upon a value density of the item.

6. The system of claim 5 wherein the value density can be stated as the probability of user access given evidence divided by the size of the item and which can be defined as:

$$value\ density = \frac{p\,(access \mid \mathrm{E})}{item\ size}$$

7. The system of claim 6 wherein the inference system determines whether the item should be regarded as a one-shot item based upon at least one of: a property of the item, a property of a user, extrinsic data, a determined probability and value density.

8. The system of claim 7 stores a one-shot item in an archived state after it is accessed.

9. Canceled

10. The system of claim 1 further comprising:

a learning system that acts upon the inference system and modifies inferences made thereby based upon at least one of: a property of the item, a property of a user, extrinsic data, a determined probability and a value density.

11. A utility based item archiving system comprising:

means for determining the utility of an item; and

means for inferring whether to store as active or archive the item based upon the determined utility of the item.

12. The system of claim 11 wherein probabilistic techniques are utilized to determine the utility of the item.

13. The system of claim 12 being temporally sensitive such that a determined utility of an item and storage inferences drawn therefrom are continually updated over time.

14. The system of claim 13 further employing a cost-benefit analysis means to determine whether to actively store the item.

15. The system of claim 14 wherein the cost-benefit analysis means yields a value density that is a measure of item utility versus size.

16. The system of claim 15 wherein a knapsack packing analysis is employed to determine how to store the item.

17. The system of claim 16 wherein, when more than one item exists, the knapsack packing analysis considers respective value densities of items to determine which items to store as active and which items to archive.

18. A method for determining how to store items comprising:

determining respective item utilities through probabilistic computations;

determining respective value densities of the items based upon determined probabilities of item access and item sizes; and

inferring whether to store actively, archive or discard items based upon at least one of: the determined probabilities and the value densities.

19. The method of claim 18 further comprising:

updating determined item utilities over time;

determining modern value densities based upon updated item utilities; and

making contemporary inferences from at least one of: the temporally adjusted probabilities and value densities.

20. The method of claim 19, when more than one item is present, further including:

mitigating inefficient use of active space by applying a knapsack computation to the modern item value densities.

21. A method of streamlining actively stored items comprising:

removing items from an active item store when at least one of: determined item utilities and value densities fall below a predetermined threshold.

22. The method of 21 furthering comprising:

removing one-shot items from an active item store after being accessed a first time.

23. A computer-readable medium storing computer-executable instructions adapted to perform the method of claim 18.

24. A system adapted to infer how to store an item comprising:

a probability component adapted to determine a probability that the item will be accessed;

a cost-benefit component adapted to determine a value density of the item as a function of the determined probability and the size of the item; and

an inference system adapted to infer whether to store the item in an active or archive item store based upon at least one of: the determined probability and the value density.

25. The system of claim 24 wherein the probability component is adapted to determine the probability based upon at least one of: information related to a property of the item, a property of a user and extrinsic data.

26. The system of claim 25 further comprising:

a property log operative to store information regarding at least one of: a property of the item, a property of the user and extrinsic data.

27. The system of claim 26 being temporally sensitive such that information stored in the property log is updated over time.

28. The system of claim 27 being temporally sensitive such that at least one of: a determined probability, value density and inference drawn therefrom is updated over time.

29. The system of claim 28 further comprising:

a learning system adapted to learn how to adjust the inference system based upon at least one of: updated log information, determined probabilities and value densities.

30. The system of claim 24 further comprising:

an interactive user interface (UI).

31. The system of claim 30 wherein conditions are utilized by the probability component and inference system, the UI including a selection element operative to allow a condition to be enabled/disabled.

32. The system of claim 31 wherein the UI includes an entry element operative to allow a condition to be configured.

33. A system operable to determine which of a plurality of items to store actively comprising:

a probability component adapted to determine respective probabilities that the items will be accessed;

a cost-benefit component adapted to determine respective value densities as a function of the respective probabilities and sizes of the items;

an inference system adapted to infer whether items should be actively stored based upon at least one of: respective probabilities and value densities; and

an optimization component operable to determine which items to store actively based upon the respective value densities of the items and an amount of active space available.

34. The system of claim 33 wherein the probability component is adapted to determine the respective probabilities of the items based upon at least one of: respective properties of the items, a property of a user and extrinsic data.

35. The system of claim 34 further comprising:

a property log operative to store information regarding respective properties of items, a property of the user and extrinsic data.

36. The system of claim 35 being temporally sensitive such that information stored in the property log is updated over time.

37. The system of claim 36 being temporally sensitive such that determined probabilities, valued densities and inferences drawn therefrom are updated over time.

38. The system of claim 37 further comprising:

a learning system adapted to learn how to adjust the inference system based upon at least one of: updated log information, determined probabilities and value densities.

39. A method to determine which of a plurality of items to store actively comprising:

determining respective probabilities that the items will be accessed;

determining respective value densities as a function of the respective probabilities and sizes of the items;

inferring whether items should be actively stored based upon at least one of: respective probabilities and value densities; and

determining which items to store in active space based upon the respective value densities of the items and an amount of active space available.

40. The method of claim 39 further comprising:

determining the respective probabilities of the items based upon at least one of: respective properties of the items, a property of a user and extrinsic data.

41. A computer-readable medium storing computer-executable instructions adapted to perform the method of claim 39.

42. A system operable to infer whether an item will be accessed once or more than once comprising:

an inference system operable to infer whether an item will be accessed once or more than once based a comparison of properties of the item to properties of other items that have been accessed once, the inference system being operable to analyze properties of a user and extrinsic data.

a probability component adapted to determine the probability that the item will be accessed; and

a cost-benefit component adapted to determine a value density of the item as a function of the determined probability and size of the item, the inference system operable to compare at least one of: the determined probability and value density to probabilities and value densities of items that have been accessed once.

43. A method to infer whether an item will be accessed once or more than once comprising:

comparing properties of the item to properties of other items that have been accessed once;

analyzing properties of a user and extrinsic data;

determining a probability that the item will be accessed;

determining a value density of the item as a function of the determined probability and size of the item; and

comparing the determined probability and value density to probabilities and value densities of items that have been accessed once.

44. A computer-readable medium storing computer-executable instructions adapted to perform the method of claim 43.

45. An interactive user interface (UI) adapted to display a condition that affects how a decision is made regarding the storage of an item comprising:

a selection element operable to allow a condition to be enabled/disabled; and

an entry element operable to permit a condition to be configured.

IX. Evidence Appendix (37 C.F.R. §41.37(c)(1)(ix))

None.

X. Related Proceedings Appendix (37 C.F.R. §41.37(c)(1)(x))

None.